RECENT DISPERSAL AND DIET RELAXATION MIGHT EXPLAIN THE MONOTYPIC AND ENDEMIC GENUS *MONTROUZIERANA* SIGNORET, 1861 IN NEW CALEDONIA (HEMIPTERA: FULGOROMORPHA: TROPIDUCHIDAE)

RONG-RONG WANG[1, 4], ADAM STROIŃSKI[2], JACEK SZWEDO[3], THIERRY BOURGOIN[4] and AI-PING LIANG[1, *]

[1]*Key Laboratory of Zoological Systematics and Evolution, Institute of Zoology, Chinese Academy of Sciences, 1 Beichen West Road, Chaoyang District, Beijing 100101, P.R.China; e-mail: wangrr_2008@163.com*
[2]*Museum and Institute of Zoology, Polish Academy of Sciences, 64, Wilcza Street, PL00-679 Warszawa, Poland; e-mail: adam@miiz.waw.pl*
[3]*Department of Invertebrate Zoology and Parasitology, University of Gdańsk, 59, Wita Stwosza Street, PL80-308 Gdańsk, Poland; e-mail: jacek.szwedo@biol.ug.edu.pl*
[4]*Département Systématique et Evolution, UMR 7205 - ISyEB, MNHN-CNRS-UPMC-EPHE, Muséum National d'Histoire Naturelle, CP50, 45 rue Buffon, F-75005 Paris, France; e-mail: bourgoin@mnhn.fr*
[*]*Correspondening author Ai-Ping Liang: e-mail: liangap@ioz.ac.cn*

Abstract.— The planthopper genus *Montrouzierana* Signoret, 1861 (Hemiptera: Fulgoromorpha: Tropiduchidae) and its only known endemic species to New Caledonia, *M. oxycephala* (Montrouzier, 1861), are redescribed. Illustrations of diagnostic characters including male and female genitalia are provided. The systematic position of the genus is briefly discussed. Morphological characters and distribution data suggest a recent dispersal event to New Caledonia, probably from Australia, linked with a possible relaxation/inhibition of ancestral constraints on feeding behaviour.

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Key words.— Morphology, taxonomy, systematics, endemism, Tropiduchidae, Australasian/Pacific Region.

INTRODUCTION

Within the Tropiduchidae (Hemiptera: Fulgoromorpha), Tropiduchini represent the most diverse taxon of the 22 tribes (including fossils) currently composing the family (Bourgoin 2014). The monotypic planthopper genus *Montrouzierana* Signoret, 1861 was placed in Tropiduchini by Melichar (1914) and this statement was later supported by Fennah (1982). Members of the tribe mainly occur in the Oriental and Afrotropical regions, including the western Pacific (Bourgoin 2014). *Montrouzierana* co-occurs in New Caledonia with three other Tropiduchini genera: *Peggioga* Kirkaldy, 1905, *Scenoma* Fennah, 1969, and *Teramnon* Fennah, 1969.

Montrouzierana stands apart from all other tropiduchid taxa by several noteworthy morphological disparities such as its large size, the head capsule conformation, and particularly the large tegmina and their venation pattern. However, the genus has been previously only inadequately described in literature and good illustrations and clear diagnostic information,

particularly on the morphology of the male and female genitalia have been lacking. Such information is also important to assess phylogenetic relationships of the genus.

The type species was described as *Pseudophana oxycephala* Montrouzier, 1861 from Lifu (Loyalty Islands, Montrouzier 1861: 72) and in the same paper in an infra-paginal note, transferred by Signoret into *Montrouzierana* as a monotypic new genus (Signoret *in* Montrouzier 1861: 72). Originally the species was considered as a Dictyopharidae by both authors. The genus was later transferred into Tropiduchidae by Melichar (1914: 5).

Both the monotypic and endemic conditions coupled with the insufficiently described and analysed morphological disparities, plus the rarity of specimens of *M. oxycephala* in collections, make *Montrouzierana* an attractive and interesting taxon to study in the frame of the Tropiduchidae evolution. It brings therefore questions about which are its related taxa? What does it tell us from a biogeographical point of view? Have these morphological particularities something to do with any insular effect?

While sorting and identifying Tropiduchidae material from the Muséum national d'Histoire naturelle in Paris and the Upper Silesian Museum in Bytom, Poland, several specimens of *Montrouzierana* collected in New Caledonia were found. This material enabled us to re-describe the genus, provide new illustrations of its morphology and to address the questions above.

MATERIAL AND METHODS

The SEM photographs of uncoated specimens were taken in the Laboratory of Scanning Microscopy, Museum and Institute of Zoology, Polish Academy of Sciences, Warsaw, using a scanning microscope HITACHI S-3400N under Low Vacuum conditions. Dry-mounted specimens were used for the description and illustrations. External morphology was observed under stereoscopic microscopes, measurements were made with an ocular micrometer. To examine male and female genitalia, abdomens were removed and macerated in 10% KOH overnight. Precise dissections and cleaning of genital structures were finished in distilled water. After being transferred to distilled water, the genitalia were stained with methylrosanilinium chloride (a clinical solution, comprising methyl violet, ethanol and purified water) to highlight the internal thin and transparent membranous parts (Wang *et al*. 2009). Final observations and drawings were made in glycerine under a compound microscope. Photographs of habitus were taken with a Leica DFC 295 digital camera associated with a Leica Z16 APO binocular. The digital images were then imported into Adobe Photoshop 8.0 for labelling and plate composition. Line figures were drawn with the aid of a camera lucida mounted on a Zeiss Stemi SV-11 stereomicroscope.

Specimens examined during the course of this study are deposited in:

MNHN – Muséum national d'Histoire naturelle, Paris, France;

IZCAS – Insect Collection of the Institute of Zoology, Chinese Academy of Sciences, Beijing, China;

USMB – Upper Silesian Museum, Bytom, Poland;

INHS – Illinois Natural History Survey, Insect Collection;

NHMW – Natural History Museum, Vienna, Austria.

Morphological terminology follows that of Bourgoin and Huang (1990) for male genitalia, Bourgoin (1993) for female genitalia, and Bourgoin (1997) and Szwedo and Żyła (2009) for tegminal venation.

TAXONOMY

Order Hemiptera Linnaeus, 1758

Suborder Fulgoromorpha Evans, 1946

Superfamily Fulgoroidea Latreille, 1907

Family Tropiduchidae Stål, 1866

Subfamily Tropiduchinae Stål, 1866

Tribe Tropiduchini Stål, 1866

Genus *Montrouzierana* Signoret, 1861

Montrouzierana Signoret, in Montrouzier, 1861: 72.
Montrouziera [sic!]: Melichar 1914: 102.

Type species. (NHMW) *Pseudophana oxycephala* Montrouzier, 1861: 72; designation by Signoret in Montrouzier 1861: 72.

Redescription. Head, in dorsal view (Figs 1A, 2B, 2F, 3A, 3C), produced in front of eyes more than the length of compound eye. Vertex (Figs 1A, 2B, 2F, 3A, 3C) conical in dorsal view, broader than long, not longer than pronotum and mesonotum combined, distinctly bent upwards at apex in lateral view; with lateral margins ridged, converging to a pointed apex; median carina simple, reaching the apex; disc of vertex flat, depressed. Frons (Figs 1B, 2D, 2G, 3E, 3F, 4A) at least twice as long in middle as broad, median carina simple and percurrent, without supplementary carinae between median carina and lateral margins. Frontoclypeal suture obtusely angled. Clypeus with median carina distinct. Rostrum (Figs 1B, 2D, 2G, 2I) reaching bases of hind coxae; apical segment longer than broad, shorter than subapical one. Compound eyes (Figs 1A–D, 2A–I, 3A–E, 4A–B) oval, postocular eminence distinct, posteriad of compound eye. Lateral ocelli present. Antenna (Figs 3B, 3E, 4A–B) with pedicel club-like, covered with microsetae to its base, with clover-leaf like type of sensilla.

Pronotum (Figs 2B, 2F, 3A–D, 4B–D) with disc distinctly depressed between median and lateral carinae; posterior margin of pronotum carinate, deeply angulately excavated, with one lateral carina between eye and tegula.

Mesonotum (Figs 2B, 2F, 3A–D, 4B–D) longer than broad, tricarinate, lateral carinae parallel to median carina at posterior $^2/_3$, reaching margin of mesonotum, arcuately converging anteriorly, fused to median carina. Mesoscutellar suture arcuate; posterior margin of mesoscutellum angulate. Tegula carinate.

Tegmina (Figs 1A, 1C–D, 2A, 2C, 2H, 4C–F, 5A–F) developed, membranous, without granulation, with irregular bacillum-like blisters and veinlets on the corium, costal area well developed, more than $^1/_2$ of width of costal cell and traversed by veinlets; the cells between these veinlets more than twice as long as wide; costal cell extending beyond half length of tegmen and with irregular and blind false veins and veinlets; stems ScP+R forked basad at $^1/_5$ of tegmen length, branch ScP+RA$_1$ forked basad of $^1/_4$ of tegmen, emitting additional branch to the margin before the nodal line. Stems ScP+R and M leaving basal cell with a short common stalk. Stem M forked before level of nodal line. Stem CuA forked basad of $^1/_3$ of tegmen, forked twice before level of nodal line, distad of stem ScP+R forking, basad of claval veins junction. Claval veins junction near apical $^1/_3$ of clavus. Apical cells in number more than 25, preapical cells in number more than 12.

Hind wings (Fig. 2J) with stems ScP+R, M and CuA, fused at base, stem ScP+R emerging at very base, common portion of stems M and CuA short; branch ScP+RA single; branch RP with two terminals, *r-m* veinlet single. Stem M forked well apicad, with two terminals: branch M$_{1+2}$ and M$_{3+4}$ single. Stem CuA forked at the same level of stem ScP+R forking, then forked again, reaching margin with 6 terminals, single veinlets *m-cua* and *cua-cup* present. Stem CuP single, reaching margin in a short distance of last terminal of CuA. Stem Pcu forked, A$_1$ single.

Hind tibia (Fig. 2H) with 3 lateral spines, metatibio-tarsal formula 6/5/2.

Male terminalia. Pygofer (Figs 6A–B, 7C–D, 8A–B, 8D, 8G) symmetrical, in lateral view narrow and high, slightly wider ventrally than dorsally; dorsolateral angles of pygofer without process in lateral view, dorsal margin deeply excavated to accommodate anal tube. Anal tube (Figs 4A–B, 7B–C, 8A–B, 8D) elongate, surpassing apex of aedeagus, apex distinctly concave in dorsal view, right margin of subapical part produced into triangular lobe; epiproct and paraprocts inserted at $^1/_3$ from apex, not reaching the distal margin of anal tube in dorsal view. Gonostyli (Figs 4A–B, 7B, 8D, 9B, 9D, 9G) asymmetrical, fused together along middle line into a shallowly concave plate, dorsal margin strongly produced into a triangular lobe at apical $^2/_5$, left gono-

stylus with an oblique, long hook-like process at basal $^1/_3$; right gonostylus forming irregular triangle, relatively large and broad; apex of gonostyli concaved and with two blunt tooth-like processes at middle in ventral view (Figs 7D, 8G). Periandrium (Figs 6A–G, 8B–D) reduced and very short, ring-like, nearly indistinct, dorsally connected by a short membranous area bearing the tectiductus with ventrobasal margin of anal tube, fused by a membrane with pygofer laterally and ventrally, surrounding aedeagus basally. Aedeagus (Figs 6A–D, 7A–B, 8B–F) asymmetrical, elongate, sinuate and tubular, basal part directed anteroventrally, then curved and directed dorsally, shaft of aedeagus with many micro-teeth; apical part of aedeagus distinctly expanded, with a pair of spinose processes and angulate lobe.

Female terminalia. Monotrysian. Gonoplacs (Figs 9C, H) with 13–14 strongly sclerotized teeth arranged in two rows along apical margin. Gonapophyses VIII (Fig. 9B–C, F, H) saw-like, strongly sclerotized with 6 blunt teeth on dorsal margin, with minute teeth arranged in 6 oblique short rows on lateral side, with three blunt teeth subapically on the ventral margin, laterally at base with an oblique row of several tiny teeth; base of gonapophyses VIII asymmetrical, with distinct lobe in ventral view (Fig. 9A–B, E–F). Gonapophyses IX (Fig. 9B, F) with apical ends confluent; gonospiculum shorter than medial length of triangular part. Gonocoxae VIII forming sclerotized plates, slightly produced posteriorly in dorsal and ventral portions in lateral view. Sternite VII with posterior margin nearly straight, shallowly notched medially in ventral view (Fig. 9A, E). Posterior vagina slightly sclerotized (Fig. 9A–B, E–F). Dorsally, a large bursa copulatrix opens directly into vagina and a small triangular common oviduct and spermatheca open apically into anterior vagina; bursa copulatrix membranous, bladder-like, covered with numerous small sclerotized ornamentations. Anal tube short, apex distinctly concave in dorsal view, anal styles large, reaching the apico-ventral margin of anal tube (Fig. 9B, D, F–H).

Montrouzierana oxycephala (Montrouzier, 1861)

Pseudophana oxycephala Montrouzier, 1861: 72
Montrouzierana oxycephala, Signoret in Montrouzier (1861): 72.

Redescription. *Size*. Total length (from apex of vertex to tip of fore wings): 10.00–14.40 mm; body length (from apex of vertex to tip of anal tube): 7.40–9.40 mm; fore wing length: 8.46–11.50 mm.

Coloration. General colour yellowish-brownish, green in life.

Head and thorax. Head (Figs 1A, 2B, 2F, 3A, 3C) produced in front of eyes approximately for 1.3–1.5 times length of compound eye. Vertex (Figs 1A, 2B, 2F,

3A, 3C) 0.53–0.83 times as long as broad at base, 1.35–1.90 times as long as pronotum at mid line. Frons (Figs 1B, 2D, 2G, 3E, 3F, 4A) 2.00–2.10 times as long in middle as broad, lateral margins carinate, sinuous, diverging from apex, concave at anterior level of compound eyes, then diverging further to reach their widest point near the antennal sockets, then converging to frontoclypeal suture. Pronotum (Figs 2B, 2F, 3A–D, 4B–D) at mid line about 0.14–0.16 of length of mesonotum at mid line. Combined length of pronotum and mesonotum about 2.92–3.90 times as long as vertex at mid line.

Tegmen. Tegmen (Figs 1A, 1C–D, 2A, 2C, 2H, 4C–F, 5A–F) 2.10–2.86 times as long as broad at widest part. Branch RA and RP reaching margin with 9–10 and 4–5 terminals, relatively. Branch M_{1+2} forked before level of nodal line, terminal M_1 single, terminal M_2 forked at nodal line; branch M_{3+4} forked before level of nodal line, terminals M_3 and M_4 forked at level of nodal line. Stem CuA forked 2–3 times before level of nodal line. 28–29 apical cells and 13–15 preapical cells.

Male terminalia. Pygofer (Figs 6A–B, 7C–D, 8A–B, 8D, 8G) 1.37–1.76 times as long as the widest width, posterior margin of right pygofer lobe sinuate. Gonostyli (Figs 4A–B, 7B, 8D, 9B, 9D, 9G) 1.87 times as long as broad in left lateral view; left gonostylus with dorsal margin strongly produced dorsad at apical $^2/_5$ into a triangular lobe that terminates in a blunt tooth directed mesad, at basal $^1/_3$ with an oblique, long hook-like process, directed dorsally and curved cephalodorsad. Aedeagus (Figs 6A–D, 7A–B, 8B–F) shaft of aedeagus with many micro-teeth forming a line along the ventral side; apex distinctly expanded, a pair of spinose processes arising dorsally at middle, each curved laterad; an acutely angulate lobe, directed lateroventrad, on left apically.

Type material. Holotype ♀, Lifu Coll. Signoret// *oxycephala* det. Signoret// *Fulgora oxycephala* (M) Lifu// *Montrouziearana oxycephala* Sign. det. Melichar (NHMW). Photo: ©Natural History Museum Vienna, Hemiptera Image Collection, published with permission.

Material examined. ♀, Nouvelle Calédonie Mt. Dogny, Sarraméa 25-July-1973, MNHN(EH)18273; 1♂, Sarraméa July 1968, Nouvelle Calédonie, MNHN (EH)18274; 1♀, Réserv. Nat. de la Rivière Bleue Forêt dense humide – 160m, 166°40'E 22°06'S – Parc.5, P.malaise: 6.II.86-20.II.86, Nouvelle Calédonie, L. Bonnet de Larbogne & J. Chazeau rec., MNHN(EH)18275; 1♀, Réserv. Nat. de la Rivière Bleue Forêt dense humide – 160m 166°40'E 22°06'S – Parc.5, P. malaise: 6.II.86-20.II.86, Nouvelle Calédonie, L. Bonnet de Larbogne, J. Chazeau & A. S. Tillier rec., MNHN(EH)18276; 1♀, Réserv. Nat. de la Rivière Bleue. Forêt humide sur alluvions – 160m, 166°40'E 22°06'S – Parc.6, P.malaise: 20.II.86-12.III.86 / Muséum Paris. Nouvelle Calédonie.

L. Bonnet de Larbogne, J. Chazeau, A. & S. Tillier rec. MNHN(EH)22057; 1♀, Réserv. Nat. de la Rivière Bleue. Forêt dense humide – 160m, 166°40'E 22°06'S – Parc.6, P.malaise: 31.I.87-12.II.87 / Muséum Paris. Nouvelle Calédonie. L. Bonnet de Larbogne, J. Chazeau, A. & S. Tillier rec. MNHN(EH)22058; 1♀, Réserv. Nat. de la Rivière Bleue. Forêt dense humide – 160m, 166°40'E 22°06'S – Parc.6, P.malaise: 6.II.86-20.II.86 / Muséum Paris. Nouvelle Calédonie. L. Bonnet de Larbogne & J. Chazeau rec. MNHN(EH)22059; 1♀, Réserv. Nat.de la Rivière Bleue Forêt dense humide – 160m, 166°40'E 22°06'S – Parc.5, P.malaise: 20.II.85-8.II.86, Nouvelle Calédonie, L. Bonnet de Larbogne, J. Chazeau, & A. S. Tillier rec., MNHN(EH)18277 (IZCAS). 1♂, New Caledonia (N) 21°08.941'S, 165°19.407'E, Aoupinié (refuge) 29.03.2008 400m netting, biting, leg. R. Dobosz, 5915/2419, coll. Upper Silesian Museum (USMB) Bytom, Poland; 2♀♀, same data but 30.03.2008, 5915/26710 and 30.03.2008, 5915/26759; 1♀, New Caledonia (N) 21°08.151'S, 165°19.194'E, Aoupinié netting, biting from refuge to 510 m, 28.03.2008, leg. R. Dobosz, [5915/27143, coll. Upper Silesian Museum (USMB) Bytom, Poland; 1♀, New Caledonia (S) 21°37.632'S, 165°45.830'E, Farino env. rainforest, at light, Les Grandes Fougeres, 11.03.2008, 467 m, leg. R. Dobosz & T. Blaik, 5915/17570, coll. Upper Silesian Museum (USMB) Bytom, Poland; 1♂, New Caledonia (S) 21°37.632'S, 165°45.830'E, Farino env., Les Grandes Fougeres, rainforest, netting, biting, 11.03.2008, 467 m, leg. R. Dobosz & T. Blaik, 5915/17622, coll. Upper Silesian Museum (USMB) Bytom, Poland; 1♂, same data but 12.03.2008, 5915/17583, coll. Upper Silesian Museum (USMB) Bytom, Poland; 2♂♂, New Caledonia (N) 21°00.318'S, 165°14.605'E, Farino env., Tchamba (Wâo Uni), 01.04.2008 from refuge to 550m, leg. R. Dobosz, 5915/26617 and 5915/26625, coll. Upper Silesian Museum (USMB) Bytom, Poland; 1♀, New Caledonia (S) 21°35.407'S, 165°47.728'E, Col d'Amieu, 422–451 m, netting, biting, 16.03.2008, leg. R. Dobosz & T. Blaik, 5915/19044, coll. Upper Silesian Museum (USMB) Bytom, Poland; 1♀, same data but 450–422 m, netting, biting, 15.03.2008, 5915/2005; and 5 specimens from MNHW as: 1♂, New Caledonia (S) 21°35.2'S, 165°46.4'E, Col d'Amieu, 450–470 m, (6.5–7.0 km from gate) 6–7.01.2001 (loc 6) leg. M. Wanat & R. Dobosz; 1♀, New Caledonia (S) 21°39.0'S, 165°46.9'E, Farino (refuge & circuit track) 3.01.2007, 220–300 m, leg. M. Wanat & R. Dobosz; 1♂, New Caledonia (S) 22°05' S / 166°38' E, 280–330 m, Haute Rivière Bleue: La Tranchee-Sentier des Kaoris, humid forest, 24.01.2004, leg. M. Wanat; 1♀, New Caledonia (S) 22°07' S / 166°39' E, , Rivière Bleue Park (N): Mois de Mai 300–400 m, maqus and forest, 25.01.2004, leg. M. Wanat; 1♂, New Caledonia (S) –22.2059 / 166.6797, Col des Deux Tétons, 9.12.2010, humid forest, 220–250 m, leg. M. Wanat, R. Ruta. 1♂ NEW CALEDONIA Mt. Khogis,

500m, 17 km NNE Noumea, 27–28 Dec. 1991, M.E.Irwin D.W.Webb, Malaise Trap across forest at ream, ILLI-NOIS NAT. HIST. SURVEY, *Montrouzierana* det. L.B. O'Brien 1997, INHS Insect Collection 574,942 (INHS).

DISCUSSION

Biogeography and host-plant diet. Distribution of *Montrouzierana* is restricted to New Caledonia (Montrouzier 1861, Melichar 1914, Fennah 1969). According to the data associated with the specimens collected, *Montrouzierana* was found in dense wet evergreen forest areas at three different altitude levels: around 160 m in the south, around 500 m in the central massif and at the sea level on the Lifu island (Loyalty Islands, New Caledonia archipelago, the type locality. That last location is a flat area, densely covered with a jungle-like vegetation, corresponding to a former coral atoll of a submerged volcano which emerged 2 million years ago. No indication of any speciation event could be found associated with this altitudinal zonation and clearly all specimens belong to the same species. This corroborates Grandcolas *et al*. (2008) observation that speciation in New Caledonia seems to have occurred more frequently between different mountains or mountain massifs rather than along altitudinal gradients.

However, the distribution area of *Montrouzierana* is rather large compared with other Neo-Caledonian Hemiptera taxa where high local endemicity with restricted distribution areas are a noteworthy characteristics (Fennah, 1969, Bourgoin 1997; Murienne 2009). Indeed *Montrouzierana* occurs in different massifs (Fig. 10) from the Aoupinié Massif (Mt. Dogny, Sarraméa, Col d'Amieu, Farino, Aoupinié) in the north part of the central region, to the Humboldt Massif in the south-east (Rivière Bleue National Reserve, Paita, Mt Koghi; Fennah 1969) and the Lifu Island (Montrouzier 1861). The high diversity (local richness) of the Neo-Caledonian taxa is usually explained by local radiations and adaptations after colonization resulting in restricted and local distribution of many species – but also by several dispersal events, often repeated within the same groups of organisms (Grandcolas *et al*. 2008). This is not the case of *Montrouzierana* which has not diversified after dispersing in the island. One possible explanation of this distribution would be that *Montrouzierana* only dispersed recently in New Caledonia.

Moreover *Montrouzierana* has been a good colonizer enough to occupy a distribution area much larger than the average area of other Hemiptera taxa (Bourgoin 1997; Murienne 2009). This would suggest that *Montrouzierana* was already a oligo/polyphagous species before reaching New Caledonia. However, even if oligo/polyphagous species are well known in auchenorrhynchous Hemiptera, they are generally regarded as strongly selective on their host plant use (Bernays and Chapman 1994; Nickel 2003). This trophic specialization is a very general rule particularly in planthoppers (Wilson *et al*. 1994, Nickel 2003) and it constrains their distribution to the distribution of their host plants (Attié 2008). If *Montrouzierana* was more restricted before reaching New Caledonia, it would suggest that the species, after reaching the island, adopted a host-plant diet sufficiently large to overcome the high specificity of the botanical endemics that characterize New Caledonia. Such hypothesis has already been suggested for planthoppers of La Réunion island with the linkage of the relaxation/inhibition of some ancestral constraints on feeding behavior with the dispersion event (Attié 2008). It seems such mechanism could be also functional in other islands, as exemplified by Flatidae in Madagascar and Socotra (Stroiński and Świerczewski 2013, Świerczewski *et al*. 2014)) and Ricaniidae in the Seychelles archipelago (Stroiński 2013). More precise data and further field studies will be necessary to test these alternative hypotheses.

Lineage origin and related taxa. The phylogeny of the Tropiduchidae, and particularly of the large tribe of Tropiduchini (characterised by asymmetrical, more or less fused gonostyli – Fennah 1982), is yet to be analyzed out from a single classification framework, and only a general hypothesis can be suggested at the moment for the relationships of *Montrouzierana*.

Five other species of Tropiduchidae have been reported from New Caledonia (Kirkaldy 1905, Fennah 1969, Bourgoin 2014: *Peggioga formosa* Kirkaldy, 1905, *Scenoma beroe* Fennah, 1969, *S. glabrio* Fennah, 1969, *S. palaemon* Fennah, 1969 and *Teramnon stenopteryx* Fennah, 1969). They represent three genera morphologically different from *Montrouzierana*. Moreover, according to our hypothesis of a relatively recent dispersal of *Montrouzierana* into New Caledonia, the genus could be more closely related to some West Pacific Tropiduchini taxa circum New Caledonia rather than directly to the Neo-Caledonia fauna. Fennah (1969: 89) suggested that *Montrouzierana* could be related to the lineage of *Peltodictya* Kirkaldy, 1906, another monotypic, Australian tropiduchid taxon, so far only known from two type specimens of the species *Peltodictya kurandae* Kirkaldy, 1906. In *Peltodictya*, however, the costal cells are less numerous and less than twice as long as wide, in a conformation rather different than the one exemplified by *Montrouzierana*. In return two other Australian genera could be considered as closely related to *Montrouzierana*: *Oligaethus* Jacobi, 1928 and *Rhinodictya* Kirkaldy, 1906. Both have long costal cells, wide tegmina and a produced head capsule. These first two characters are also present in *Thymbra* Melichar, 1914, another monotypic genus only known from Papua New Guinea, another possible closely related taxon.

Only a phylogenetic analysis and future field observations on the host plants of *Montrouzierana* and related taxa in Australia and New Guinea can test the hypotheses proposed here that *Montrouzierana* 1) probably belongs to the same lineage as *Thymbra* Melichar, 1914, *Oligaethus* Jacobi, 1928 and *Rhinodictya* Kirkaldy, 1906, 2) appeared in New Caledonia as the result of a relatively recent dispersal and speciation event rather from Australia, than from Papua New Guinea, and 3) successfully relaxed ancestral constraints on feeding behaviour which allowed it to enlarge its diet and distribution in New Caledonia.

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Figure 1. *Montrouzierana oxycephala* (Montrouzier, 1861), holotype. (A) Habitus, dorsal view; (B) head, frontal view; (C, D) habitus, lateral view; (E) labels. Photo by Herbert Zettel, ©Natural History Museum Vienna, Hemiptera Image Collection, published with permission.
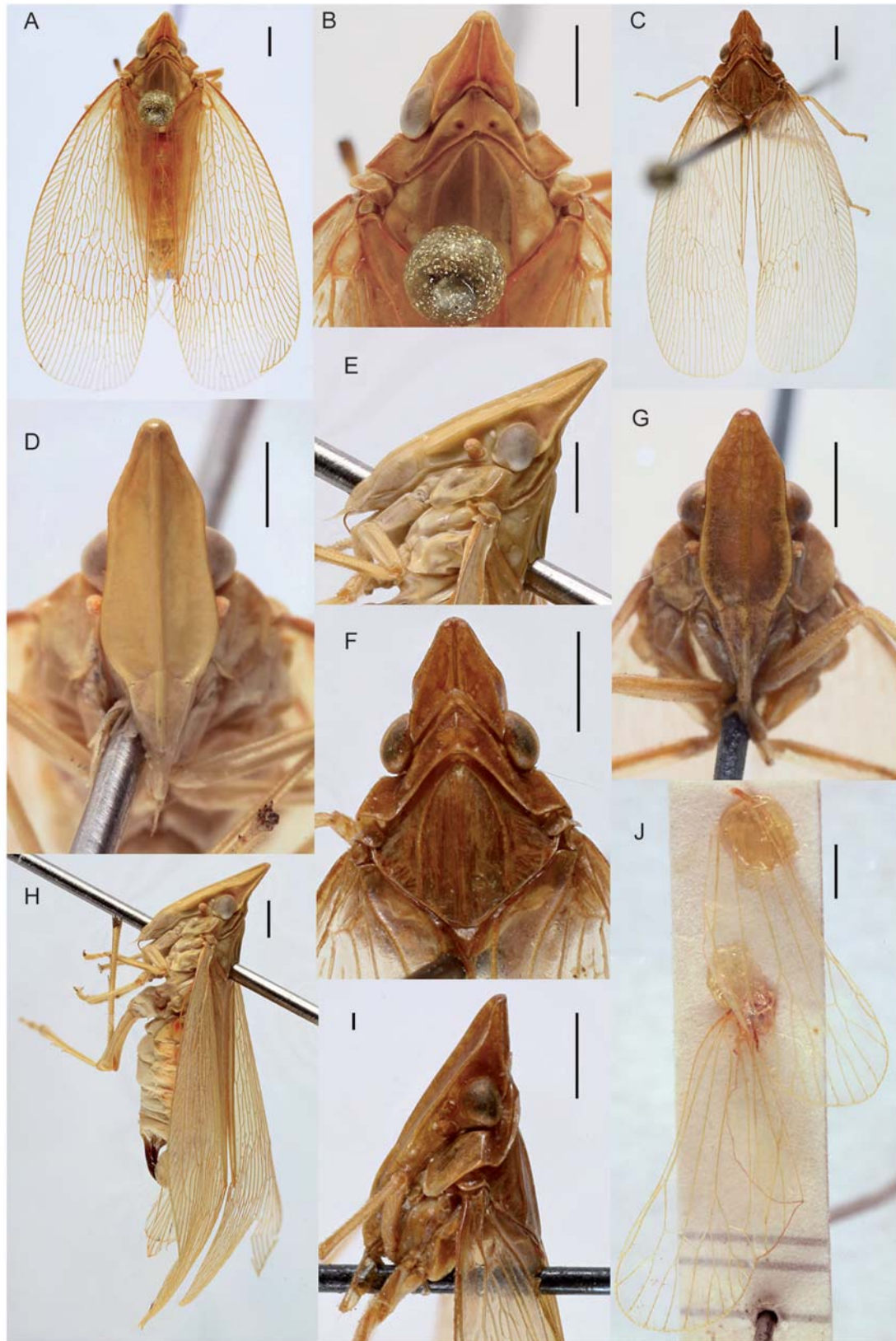
Figure 2. *Montrouzierana oxycephala* (Montrouzier, 1861). (A, C) Habitus, dorsal view; (B, F) head, pronotum and mesonotum, dorsal view; (D, G) head, oblique ventral view; (E, I) head, pronotum and mesonotum, lateral view; (H) habitus, lateral view; (J) hind wings. Scale bars: A–J = 1 mm.
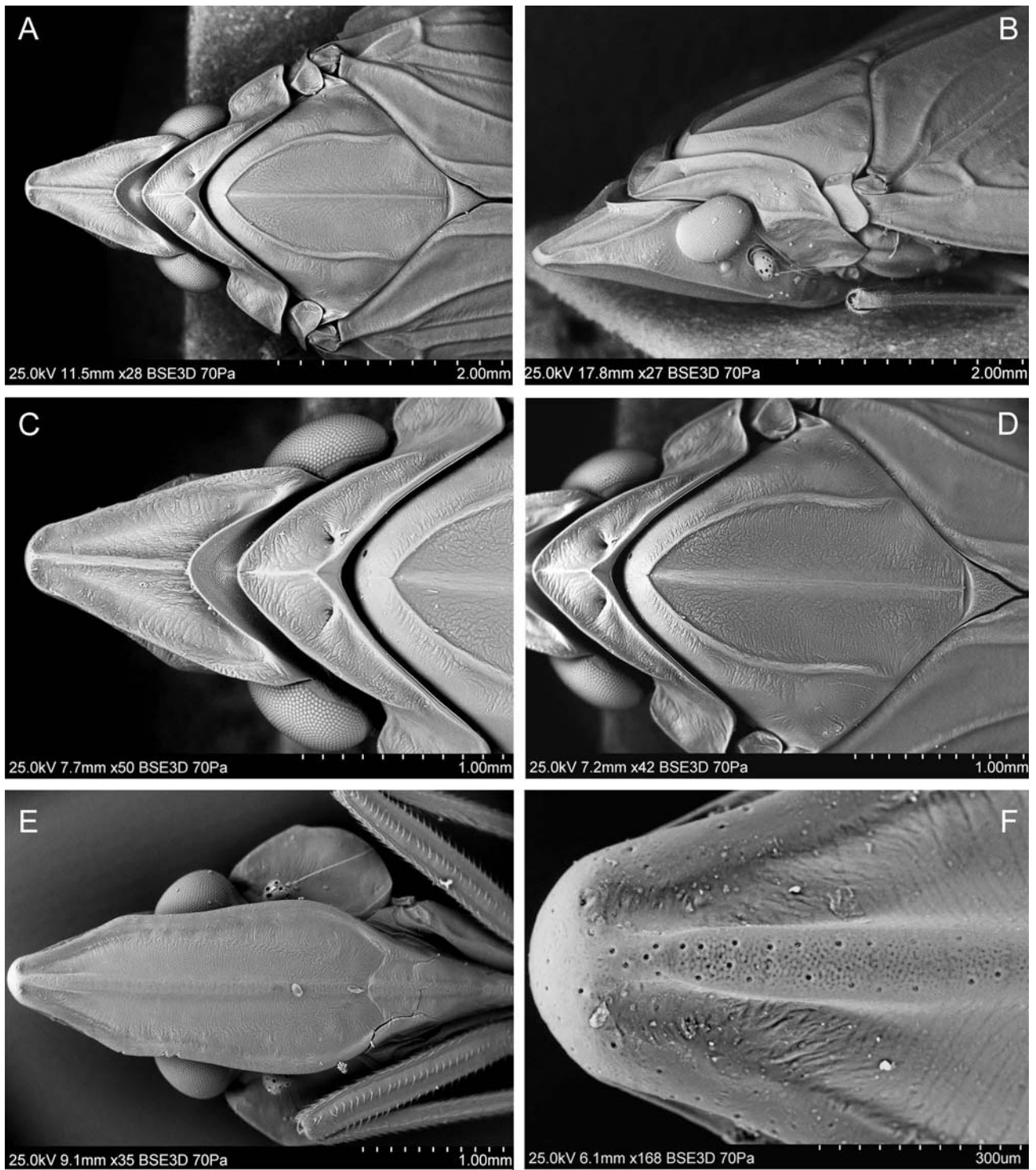
Figure 3. *Montrouzierana oxycephala* (Montrouzier, 1861). (A, B) Anterior part of body: A – dorsal view, B – dorso-lateral view; (C) vertex and pronotum, dorsal view; (D) pronotum and mesonotum, dorsal view; (E) frons and clypeus, frontal view; (F) apical part of frons, frontal view.
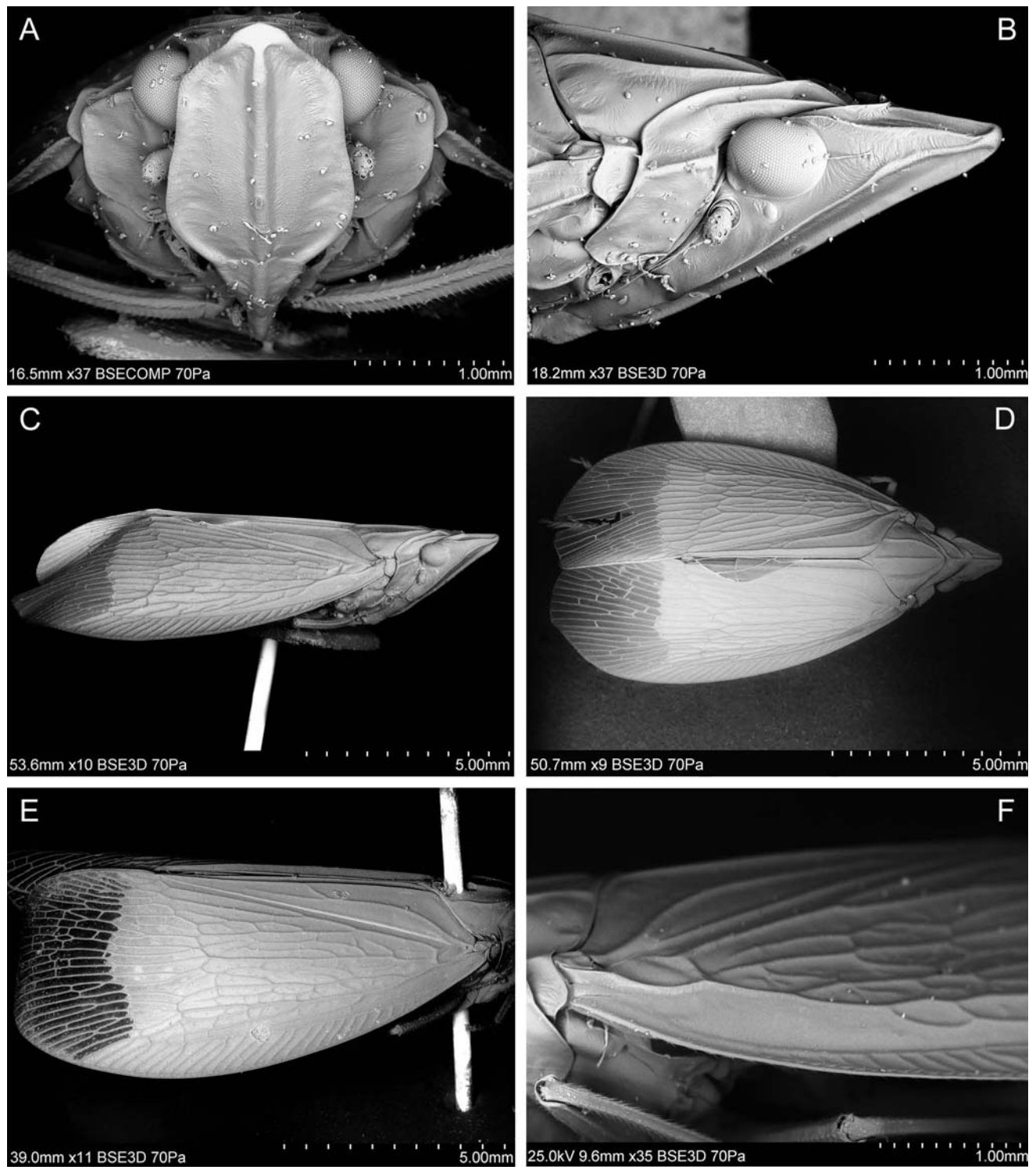
Figure 4. *Montrouzierana oxycephala* (Montrouzier, 1861). (A) Frons and clypeus, frontal view; (B) anterior part of body, lateral view; (C) habitus, lateral view; (D) habitus, dorsal view; (E) tegmina, lateral view; (F) Anterior part of tegmen.
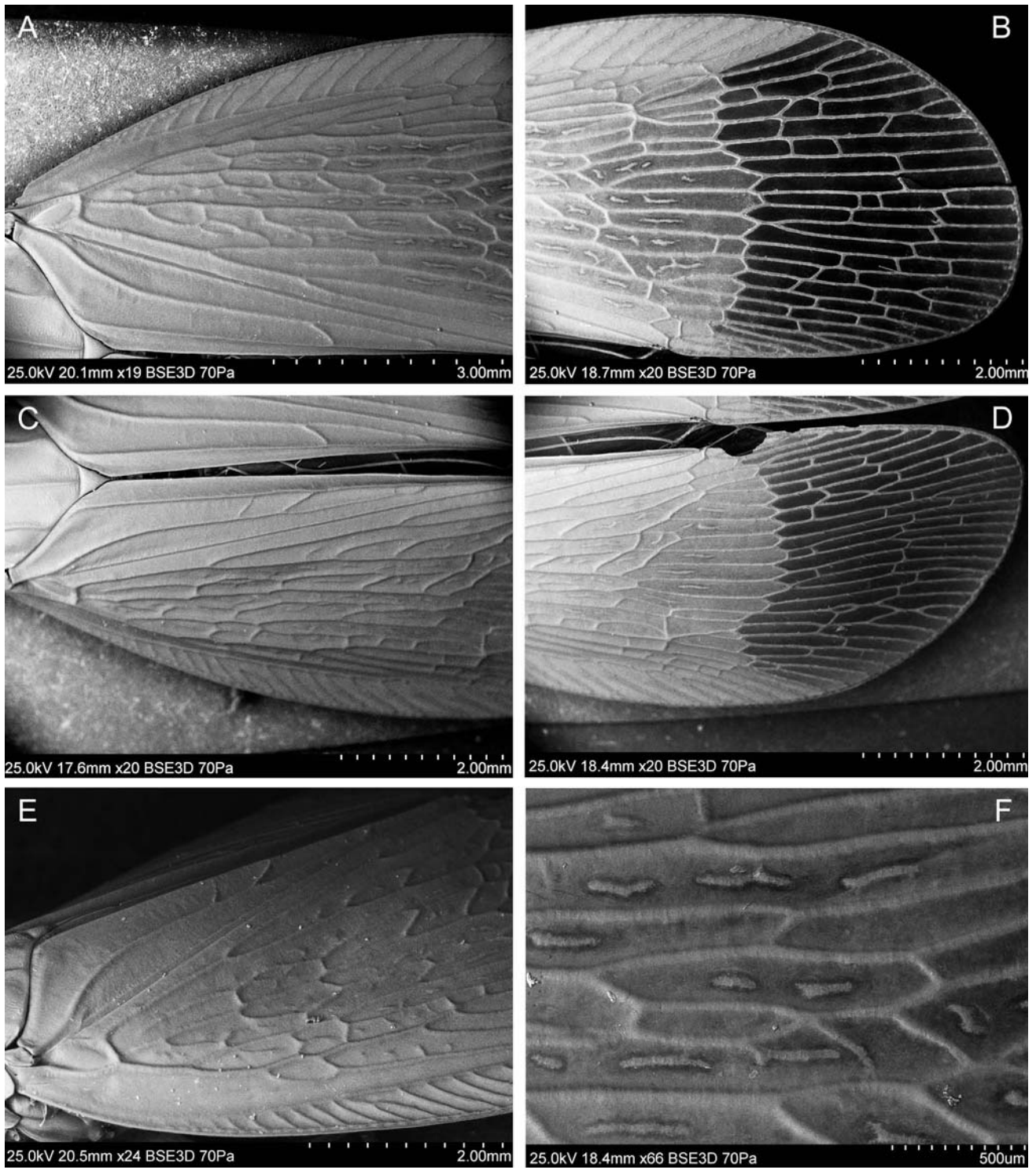
Figure 5. *Montrouzierana oxycephala* (Montrouzier, 1861). (A, C, E) Basal part of tegmen; (B, D) apical part of tegmen; (F) interveinal bacillum-like blisters.
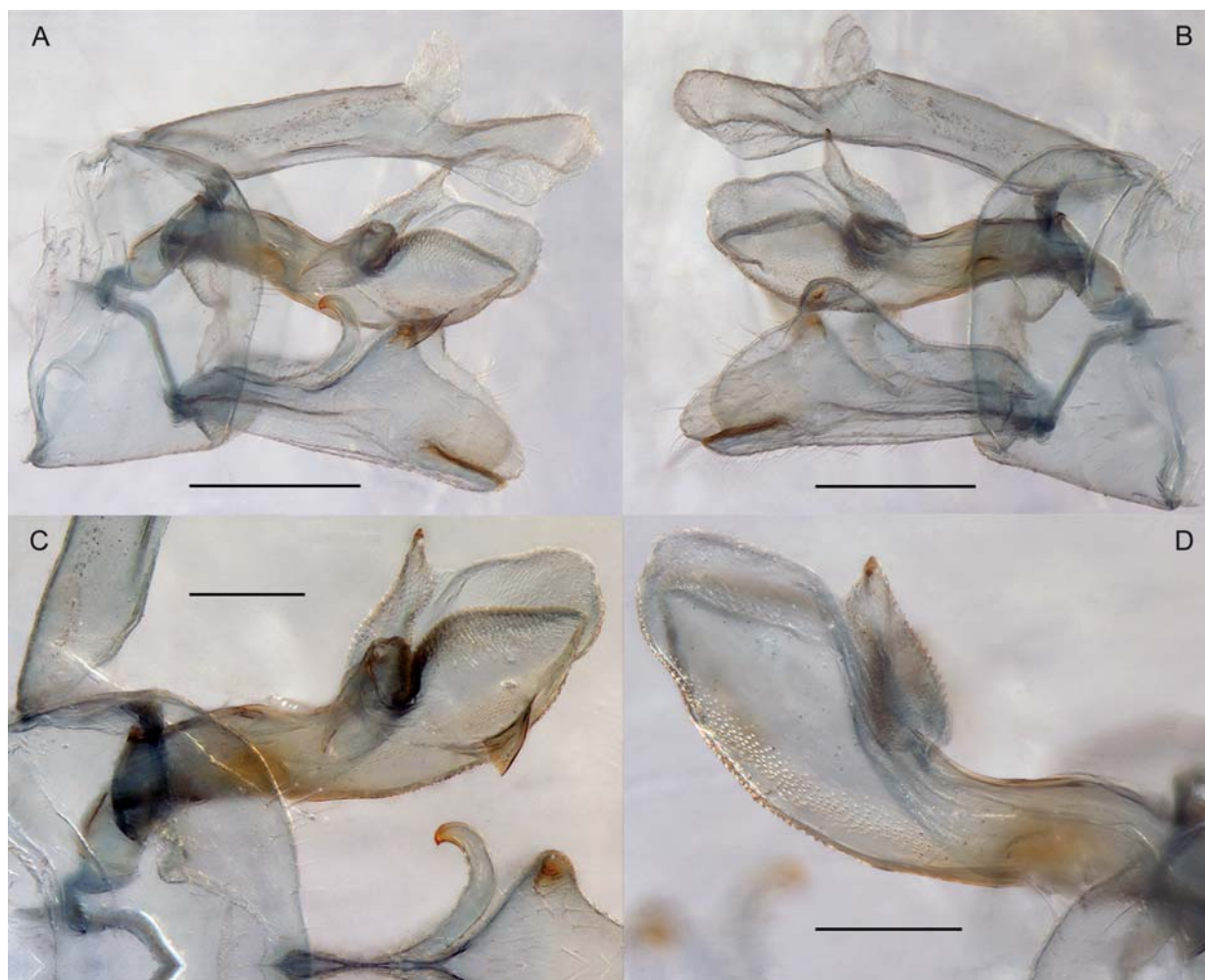
Figure 6. *Montrouzierana oxycephala* (Montrouzier, 1861), male. (A) Terminalia, left lateral view; (B) terminalia, right lateral view; (C) aedeagus, left lateral view; (D) aedeagus, right lateral view. Scale bars: A–B = 0.5 mm, C–D = 0.25 mm.

Figure 7. *Montrouzierana oxycephala* (Montrouzier, 1861), male. (A) Aedeagus, dorsal view; (B) male genitalia, caudal view; (C) Xth segment and pygofer, dorsal view; (D) pygofer and gonostyli, ventral view. Scale bars: A = 0.25 mm, B–D = 0.5 mm.
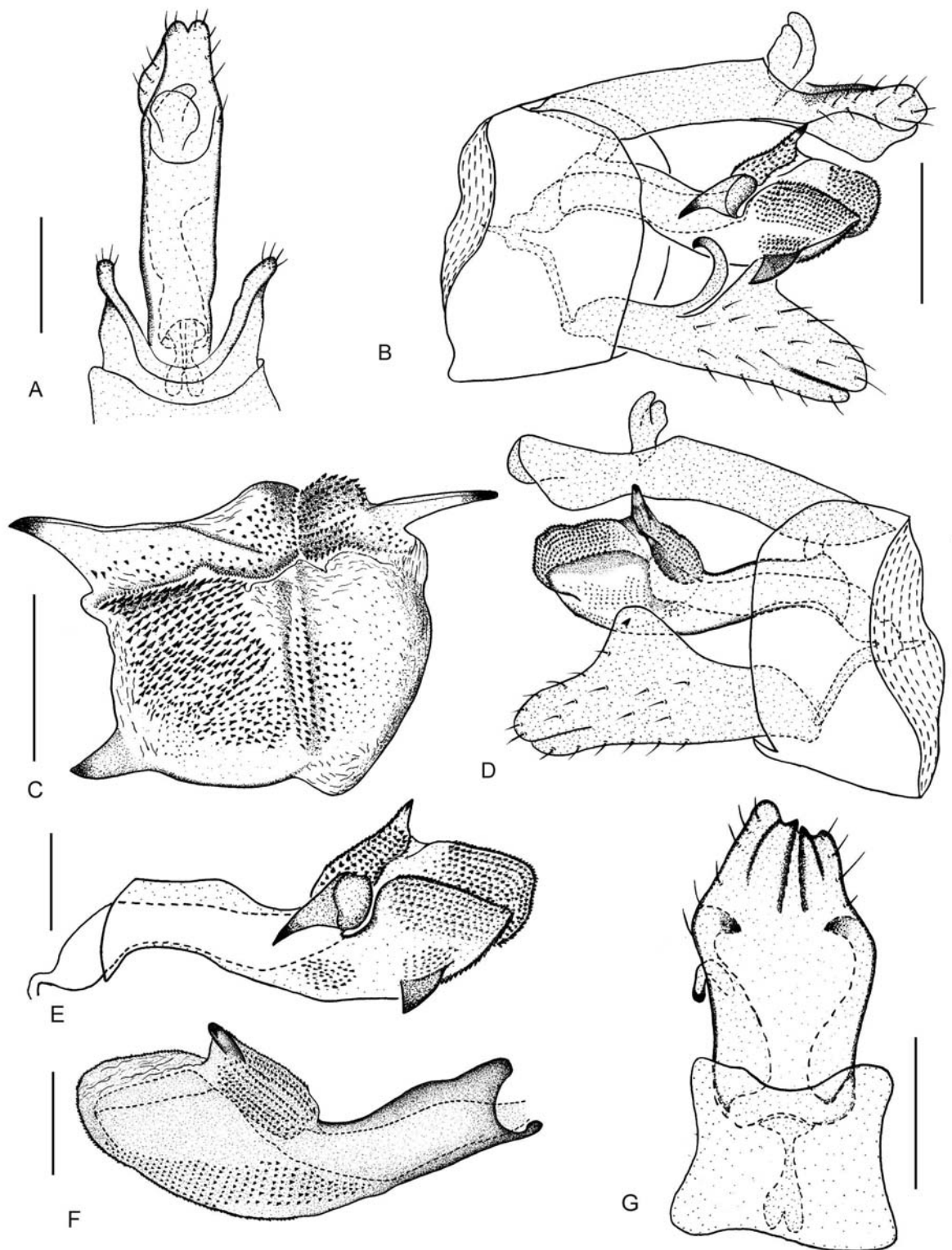
Figure 8. *Montrouzierana oxycephala* (Montrouzier, 1861), male. (A) Xth segment and pygofer, dorsal view; (B) male genitalia, left lateral view; (C) aedeagus, dorsal view; (D) male genitalia, right lateral view; (E) aedeagus, left lateral view; (F) aedeagus, right lateral view; (G) pygofer and gonostyli, ventral view. Scale bars: A–C, G = 0.5 mm; D–F = 0.25 mm.
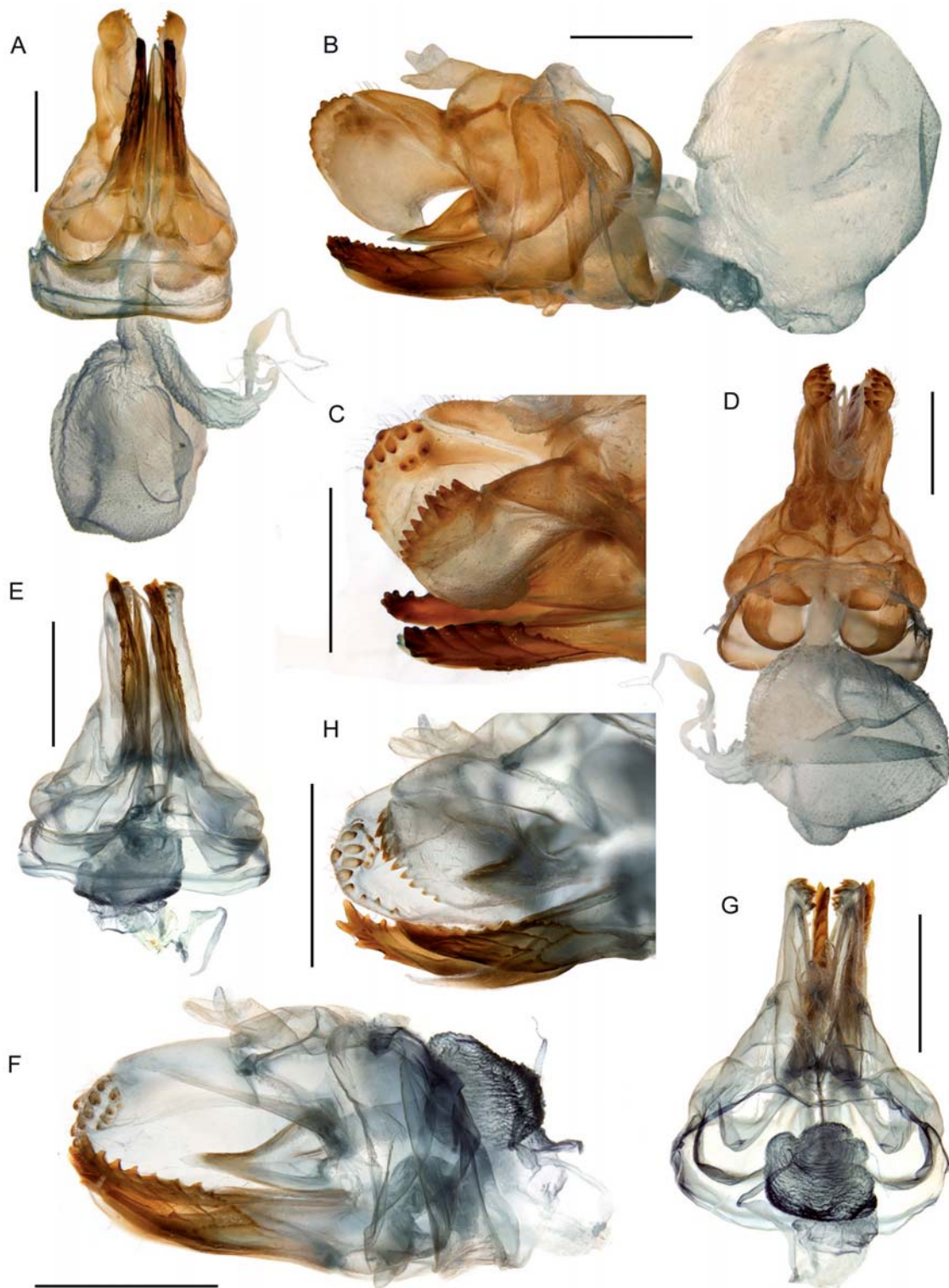
Figure 9. *Montrouzierana oxycephala* (Montrouzier, 1861), female. (A–B, D, F) Genital capsule and ectodermal genital structures: A, E – ventral view, B, F – lateral view, D, G – dorsal view; (C, H) genital capsule: C dorso-lateral view, H – ventro-lateral view. Scale bars = 1 mm.
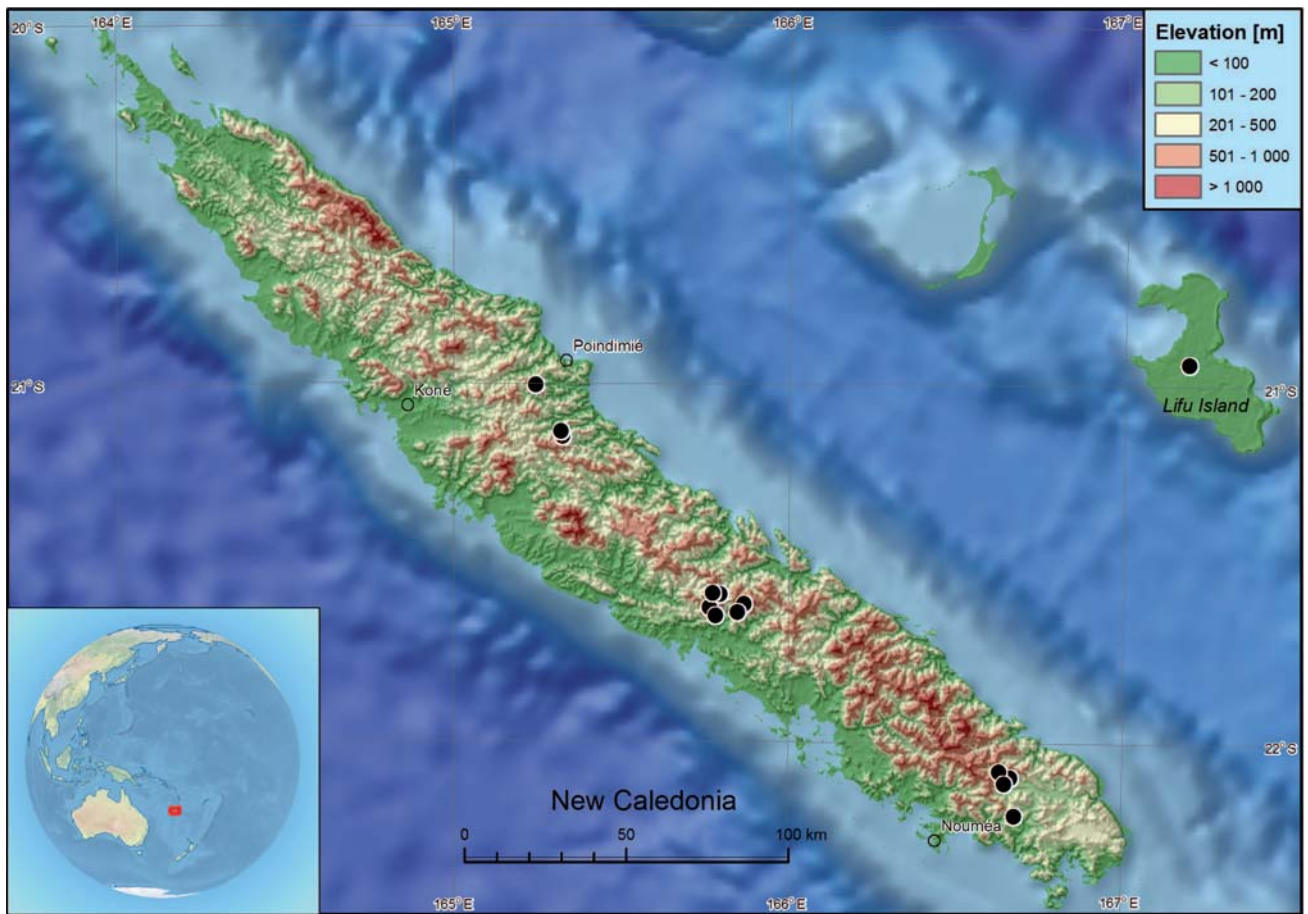
Figure 10. Distribution map of *Montrouzierana oxycephala* (Montrouzier, 1861) in New Caledonia archipelago.